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Waikiki, Hawaii, 29 June – 3 July 1998

Question: 4/15

SOURCE<sup>1</sup>: VoCAL Technologies, Ltd. (USA)

TITLE: G.hs: Refined channel probing for G.hs

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### **ABSTRACT**

V.8bis-style coding and transactions are proposed as additions to G.hs that would give forth the diagnostics for failed connections between ATU's. The G.hs procedures outlined would support the detection and location of impairments like loading coils, bridge taps and crosstalk among others.

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<sup>1</sup> Contact: Victor Demjanenko, Ph. D.  
Alberto Torres, Ph. D.  
Raúl Hazas-Izquierdo  
VoCAL Technologies, Ltd.  
Buffalo, NY 14228, USA

E: victord@vocal.com  
E: jatorres@vocal.com  
E: raulh@vocal.com  
T: +1(716) 688 4675  
F: +1(716) 639 0713



**Table 19?? Channel Capabilities - {SPar(1)} coding - Octet 2**

| SPar(1)s                        | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---------------------------------|---|---|---|---|---|---|---|---|
| Remote Inquiry                  | x | x | x | x | x | x | x | 1 |
| Remote Recording                | x | x | x | x | x | x | 1 | x |
|                                 | x | x | x | x | 1 | x | x | x |
| (to be determined)              | x | x | x | 1 | x | x | x | x |
|                                 | x | x | 1 | x | x | x | x | x |
|                                 | x | 1 | x | x | x | x | x | x |
| No parameters set in this octet | x | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## 2.2 Additional octets in CR

The new CR message's NPar(2) parameters would be coded as follows:

**Table 20?? Frequency Tone Probe - {NPar(2)} coding - Octet 1**

| NPar(2)s  | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| Frequency Tone Probe Bin Number - bits 6 - 1 (bits 6 - 1) | x | x | x | x | x | x | x | x |

**Table 21?? Frequency Tone Probe - {NPar(2)} coding - Octet 2**

| NPar(2)s  | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| Frequency Tone Probe Bin Number - bits 9 - 7 (bits 3 - 1) | x | x |   |   |   | x | x | x |
| Reserved for ITU-T (bits 6 - 4)                           |   |   | x | x | x |   |   |   |

**Table 22?? Frequency Tone Probe - {NPar(2)} coding - Octet 3**

| NPar(2)s   | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|---|---|---|
| Frequency Tone Probe Level (-dB relative to max PSD mask) (bits 6 - 1) | x | x | x | x | x | x | x | x |

**Table 23?? Frequency Level Inquiry - {NPar(2)} coding - Octet 1**

| NPar(2)s   | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|---|---|---|
| Frequency Level Bin Number - bits 6 - 1 (bits 6-1) | x | x | x | x | x | x | x | x |

**Table 24?? Frequency Level Inquiry - {NPar(2)} coding - Octet 2**

| NPar(2)s   | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|---|---|---|
| Frequency Level Bin Number - bits 9 - 7 (bits 3 - 1) | x | x |   |   |   | x | x | x |
| Reserved for ITU-T (bits 6 - 4)                      |   |   | x | x | x |   |   |   |

**Table 25?? Remote Operator Message - {NPar(2)} coding - Octet 1**

| NPar(2)s  | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| Operator message character- bits 6 - 1 (bits 6 - 1) | x | x | x | x | x | x | x | x |

**Table 26?? Remote Operator Message - {NPar(2)} coding - Octet 2**

| NPar(2)s   | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|---|---|---|
| Operator message character - bits 8-6 (bits 3 - 1) | x | x |   |   |   | x | x | x |

**Table 27?? Remote Inquiry Message - {NPar(2)} coding**

| NPar(2)s                              | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---------------------------------------|---|---|---|---|---|---|---|---|
| C-REVEILLE parameters request (bit 1) | x | x | x | x | x | x | x | 1 |
| C-XXX (to be determined)              | x | x | x | x | x | x | 1 | x |
|                                       | x | x | x | x | x | 1 | x | x |
|                                       | x | x | x | x | 1 | x | x | x |
|                                       | x | x | x | 1 | x | x | x | x |
|                                       | x | x | 1 | x | x | x | x | x |
| No parameters set in this octet       | x | x | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 28?? Remote Recording Message - {NPar(2)} coding**

| NPar(2)s                        | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---------------------------------|---|---|---|---|---|---|---|---|
| C-ECT recording request (bit 1) | x | x | x | x | x | x | x | 1 |
| C-XXX (to be determined)        | x | x | x | x | x | x | 1 | x |
|                                 | x | x | x | x | x | 1 | x | x |
|                                 | x | x | x | x | 1 | x | x | x |
|                                 | x | x | x | 1 | x | x | x | x |
|                                 | x | x | 1 | x | x | x | x | x |
| No parameters set in this octet | x | x | 0 | 0 | 0 | 0 | 0 | 0 |

### 2.3 Additional octets in CL

In addition to those parameter similar to CR, the following parameters are used to indicate the responding terminal's observations.

**Table 29?? Frequency Level Inquiry Response- {NPar(2)} coding - Octet 1**

| NPar(2)s   | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|---|---|---|
| Frequency Level Bin Number - bits 6 - 1 (bits 6 - 1) | x | x | x | x | x | x | x | x |

**Table 30?? Frequency Level Inquiry Response - {NPar(2)} coding - Octet 2**

| NPar(2)s   | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|---|---|---|
| Frequency Level Bin Number - bits 9 - 7 (bits 3 - 1) | x | x |   |   |   | x | x | x |
| Reserved for ITU-T (bits 6 - 4)                      |   |   | x | x | x |   |   |   |

**Table 31?? Frequency Level Inquiry Response - {NPar(2)} coding - Octet 3**

| NPar(2)s  | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| Observed Frequency Level (-dB relative to max PSD mask)<br>(bits 6 - 1) | x | x | x | x | x | x | x | x |

**Table 32?? Remote Inquiry Response - {SPar(2)} coding**

| SPar(2)s                              | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---------------------------------------|---|---|---|---|---|---|---|---|
| C-REVEILLE parameters request (bit 1) | x | x | x | x | x | x | x | 1 |
| C-XXX (to be determined)              | x | x | x | x | x | x | 1 | x |
|                                       | x | x | x | x | x | 1 | x | x |
|                                       | x | x | x | x | 1 | x | x | x |
|                                       | x | x | x | 1 | x | x | x | x |
|                                       | x | x | 1 | x | x | x | x | x |
| No parameters set in this octet       | x | x | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 33?? Remote Inquiry Response for C-REVEILLE - {NPar(3)} coding - Octet 1**

| NPar(3)s            | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---------------------|---|---|---|---|---|---|---|---|
| Frequency Deviation | x | x | x | x | x | x | x | x |

**Table 34?? Remote Inquiry Response for C-REVEILLE - {NPar(3)} coding - Octet 2**

| NPar(3)s         | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|------------------|---|---|---|---|---|---|---|---|
| Frequency Jitter | x | x | x | x | x | x | x | x |

**Table 35?? Remote Inquiry Response for C-REVEILLE - {NPar(3)} coding - Octet 3**

| NPar(3)s | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|----------|---|---|---|---|---|---|---|---|
| (others) | x | x | x | x | x | x | x | x |

**Table 36?? Remote Recording Response - {SPar(2)} coding**

| SPar(2)s                        | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---------------------------------|---|---|---|---|---|---|---|---|
| C-ECT recording request (bit 1) | x | x | x | x | x | x | x | 1 |
| C-XXX (to be determined)        | x | x | x | x | x | x | 1 | x |
|                                 | x | x | x | x | x | 1 | x | x |
|                                 | x | x | x | x | 1 | x | x | x |
|                                 | x | x | x | 1 | x | x | x | x |
|                                 | x | x | 1 | x | x | x | x | x |
| No parameters set in this octet | x | x | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 37?? Remote Recording Response for C-ECT - {NPar(3)} coding - Octet 1**

| NPar(3)s  | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| Frequency Domain Sampling                       | x | x | x | x | x | x | x | 1 |
| Time Domain Sampling                            | x | x | x | x | x | x | 1 | x |
| Reserved for ITU-T                              | x | x | x | x | x | 1 | x | x |
| Number of Symbols Sampled bits 3-1 (bits 6 - 4) | x | x | x | x | x |   |   |   |

**Table 38?? Remote Recording Response for C-ECT - {NPar(3)} coding - Octet 2**

| NPar(3)s  | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| Number of Symbols Sampled bits 9 - 4 (bits 6 - 1) | x | x | x | x | x | x | x | x |

**Table 39?? Remote Recording Response for C-ECT - {NPar(3)} coding - Octet 3**

| NPar(3)s                                | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| Frequency Domain Coefficient per Symbol | x | x | x | x | x | x | x | x |

**Table 40?? Remote Recording Response for C-ECT - {NPar(3)} coding - Octets 4-n**

| NPar(3)s                             | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|--------------------------------------|---|---|---|---|---|---|---|---|
| Frequency Domain Coefficient Samples | x | x | x | x | x | x | x | x |

### **3. Summary:**

We recommend the G.hs provisions for the determination of the condition of the subscriber's line. It could assist a telco in expediting an xDSL installation.

1. Agenda Item: G.hs.
2. Expectations: The committee accept as a whole the text suggested in Chapter 2 as addition to the working text for G.hs.